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19 November 2010

Lynda Deschambault
Remedial Project Manager
United States Environmental Protection Agency
Region 9 (SFD-7-1)
75 Hawthorne Street
San Francisco, California 94105

Subject: Comments on EPA's Proposed Plan Remedy
Omega Superfund Site OU-2
Los Angeles County, California

Dear Ms. Deschambault:

Geosyntec Consultants, Inc. (Geosyntec) provides these comments on EPA's Proposed Plan Remedy for OU-2 of the Omega Superfund Site[1] on behalf of McKesson Corporation, which previously operated a facility within the boundary of the OU-2 area. Our comments address two primary concerns: 1) the excessive and overall inefficient nature of EPA's proposed groundwater extraction remedy; and 2) the unnecessary risk and underestimated costs associated with the proposed use of the treated groundwater as public drinking water.

In response to these concerns, Geosyntec has developed an Alternate Remedy that is more properly scaled and efficient, and meets all of Region 9's stated remedial action objectives (RAOs), including lower potential risk to the public than EPA's Proposed Plan Remedy. The Alternate Remedy is illustrated in Figure 1 and consists of the following elements:

- Moving the Central Extraction (CE) wells approximately ½ mile farther south to more effectively capture higher concentrations of constituents of concern (COCs) that, under EPA's Proposed Plan Remedy, would not be captured by the interim remedy wells and would ultimately be captured by the Pioneer Public Supply Wells (Pioneer Wells);

[1] U.S. EPA Region 9, 2010. *Proposed Plan for OU-2 Groundwater Contamination, Omega Chemical Corporation Superfund Site*, August 2010.

- Reducing the total groundwater extraction rate from 1,300 gallons per minute (gpm) to 800 gpm, with approximately equal extraction rates of 400 gpm from the CE and Northern Extraction (NE) wells;

- Eliminating the Leading-edge Extraction (LE) wells; and

- Reinjecting the treated groundwater into the shallow aquifer from which it was extracted, rather than delivering it as drinking water (see Figure 1).

The Alternate Remedy would be just as effective, if not more so, at meeting the RAOs for OU-2 because, compared to EPA's Proposed Plan Remedy, the Alternate Remedy would provide better capture of areas with higher levels of contamination that could migrate to areas with lower levels of contamination. Fate and transport modeling of the Alternate Remedy shows that larger areas of groundwater with higher levels of contamination would migrate to the Pioneer Wells under EPA's Proposed Plan Remedy than under the Alternate Remedy (see Figure 2). This modeling was conducted using the same hydraulic properties as used in EPA modeling efforts in the Remedial Investigation (RI) and FS Reports,[2,3] including the overly conservative and unsubstantiated assumption that there is no biological degradation of these other COCs, except where specifically noted on the figures to demonstrate a low rate of biodegradation. With a low rate of biodegradation assumed (only one-tenth of the generally accepted value for tetrachloroethene (PCE)), modeling also shows that, following implementation of the Alternate Remedy, no uncontaminated portions of the aquifer would become contaminated beyond where EPA proposes to install its LE wells, and no additional public supply wells would be impacted (see Figure 1).

Also, under the Alternate Remedy, the proposed reinjection of the treated groundwater into the shallow aquifer at three or four reinjection wells west of the CE extraction wells will improve the implementability, short- and long-term effectiveness, cost, and community acceptance of the remedy by preventing more contaminated water from migrating toward the Pioneer Wells (see Figure 1) and avoiding the increased risk to public health that would result from adding treated groundwater to the drinking water supply. Injection well placement to the west of the CE wells would also allow for reinjection in an area that does not have high levels of COCs and has no

[2] CH2M Hill, 2010. *Final Remedial Investigation/Feasibility Study Reports, Omega Chemical Corporation Superfund Site, Operable Unit 2, Los Angeles County, California*, August 2010.
[3] CH2M Hill, 2010. *Final Feasibility Study Report, Omega Chemical Corporation Superfund Site, Operable Unit 2, Whittier, California*, August 2010.

identified source areas. Reinjection also would result in potentially much lower transactional costs because there would be no need to negotiate contracts with drinking water purveyors or, as is likely, permitting of an additional discharge alternative for at least part of the extracted water, or for at least part of the time. With potential waivers from the Los Angeles Regional Water Quality Control Board's (RWQCB's) non-degradation policy, a reduction in required treatment prior to reinjection could lower costs further, as the shallow aquifer is of poor water quality (i.e. high total dissolved solids and chloride concentrations).

Our comments on EPA's Proposed Plan Remedy, as well as our presentation of the Alternate Remedy, are both consistent with, and responsive to, the comments provided on 12 April 2010 by the National Remedy Review Board (NRRB) on Region 9's Draft Feasibility Study (FS) Report.[4] In our opinion, and as discussed further below, Region 9 did not adequately address the NRRB's comments in its response letter dated 6 July 2010.[5]

Comment 1: The LE wells are unnecessary, inefficient and should be eliminated.

The NRRB recommended in its Comments on the Draft (FS) Report that Region 9 provide a more thorough evaluation of the need for the LE wells. Rather than complete this evaluation, Region 9 provided a response to the NRRB that is not well supported by the relevant facts, as summarized below:

- Region 9 asserted that without installation of the LE line of extraction wells, other COCs (i.e., other than PCE) that could not be treated by existing wellhead treatment units would necessarily reach affected drinking water wells. This assertion is true for EPA's Proposed Plan Remedy, since these additional contaminants may reach the Pioneer Wells. However, fate and transport modeling of our Alternate Remedy shows this conclusion is inaccurate, if this remedy were implemented. Figure 3 illustrates that under the Alternate Remedy, four of the other COCs (chloroform, methyl tert-butyl ethane (MTBE), perchlorate, and hexavalent chromium) would not reach the public supply wells, because they would be captured by the Alternate Remedy wells. Figure 4 illustrates that five of the other COCs (trichloroethene (TCE), 1,1-dichloroethene (DCE), cis-1,2-DCE, benzene, and vinyl chloride) could reach the public supply wells under both EPA's

[4] CH2M Hill, 2010. *Draft Feasibility Study Report, Omega Chemical Corporation Superfund Site, Operable Unit 2, Whittier, California*, January 2010.
[5] U.S. EPA Region 9, 2010. *Response to Recommendations from the National Remedy Review Board, Omega Chemical Superfund Site, Whittier, California*, 6 July 2010.

Proposed Plan Remedy and the Alternate Remedy, because they are found outside of the capture zone of the CE and NE wells; however, all five of these other COCs would be treated easily by the existing wellhead treatment at the public supply wells, and in the case of the Alternate Remedy, a larger portion of these COCs would be captured. The only other COC that could reach the public supply wells and not be treated by the existing wellhead treatment is 1,4-dioxane. Although fate and transport modeling of both remedies shows that over 30 years, 1,4-dioxane would not reach the supply wells at levels that would require treatment, the 1,4-dioxane plume does not extend beyond the CE wells after 30 years for the Alternate Remedy, while EPA's Proposed Plan Remedy extends much farther south (see Figures 5a and 5b). Again, this modeling was conducted using the same hydraulic properties as used in EPA modeling efforts in the Remedial Investigation (RI) and FS Reports, including the overly conservative and unsubstantiated assumption that there is no biological degradation of these other COCs. Therefore, the Alternate Remedy is more protective of the drinking water wells.

- Region 9 asserted that without installation of the LE extraction wells, the total design extraction rate to achieve capture of the full width and depth of the COCs would still have to be 2,000 gpm at the NE and CE extraction wells. Our analysis demonstrates this assertion to be unfounded. Groundwater modeling shows that the COCs at concentrations above MCLs can be efficiently captured at the CE and NE wells at an extraction rate of 800 gpm (see Figure 1). As documented in Region 9's RI and FS, a total design flow rate of 2,000 gpm is based on an extraction rate of 1,300 gpm. An extraction rate from the NE and CE wells of 1,300 gpm, would result in a grossly excessive capture zone, approximately 3.5 miles wide, and over four times the width needed to capture the plume. Additionally, many more wells over a large area would be needed to achieve this excessive pumping rate (see Figure 6).

- Region 9 asserted that eliminating the LE wells would not significantly reduce the cost of the remedy. This assertion is unfounded, as it is largely based on the assumed, but unnecessary, over-pumping of the NE and CE wells described above. In fact, implementation of the Alternate Remedy, including the elimination of the LE wells and the resulting reduction in flow, along with efficient pumping of the NE and relocated CE wells, would result in the following very significant efficiencies:

    - 42% reduction in groundwater extraction

- 86% reduction in loss of groundwater from aquifer
- 43% reduction in energy use during operations
- 47% reduction in piping of contaminated groundwater in public right-of-ways
- 35-40% reduction in overall cost.

The Alternate Remedy would be less wasteful of resources because, unlike EPA's Proposed Plan Remedy, which would capture excessive amounts of clean water from the LE wells and mix it with contaminated water, resulting in a waste of clean water and unnecessary energy costs to extract and treat the clean water, the Alternate Remedy would optimize groundwater extraction by only pumping the amount needed to capture the potentially migrating northern portion of the COC plume while allowing natural attenuation processes and existing wellhead treatment to continue to contain and ultimately cleanup the southern portion of the plume (see Figure 1). The Alternate Remedy also would be far less costly to implement, resulting in an approximately $30 million savings over EPA's Proposed Plan Remedy.

- Region 9 asserted that without extraction at the LE wells, the plume would spread into uncontaminated portions of the aquifer downgradient of the LE wells. This assertion is largely premised on the unlikely assumption that no biodegradation is occurring in the PCE plume and ignores the fact that EPA's Proposed Plan Remedy itself causes the width of the plume to expand to uncontaminated areas, i.e., widening of the plume to the west and further migration toward the Pioneer Wells (see Figure 7). The spreading of the PCE plume over a 30-year timeframe associated with both the EPA's Proposed Plan Remedy and the Alternate Remedy is illustrated in Figure 8. In comparison to the spreading that would occur under EPA's Proposed Plan Remedy, the Alternate Remedy would result in significant shrinkage of the plume if an assumed low rate of biodegradation is considered, and a relatively small increase in the overall amount of spreading if biodegradation is not considered.

  Contrary to EPA's assertion, VOC concentrations in groundwater monitoring wells at the southern end of the plume show generally steady to declining trends, indicating that COCs are not currently spreading laterally and therefore would not spread laterally in the future. This is due to the natural attenuation processes of biodegradation and dispersion that are occurring in this area (see Figure 9).

The Alternate Remedy would be just as effective, if not more so, at meeting the RAOs for OU-2 because:

- Unlike EPA's Proposed Plan Remedy, the Alternate Remedy would not pose increased risk to the public because treated groundwater would be reinjected rather than delivered to the public as drinking water.

- Compared to EPA's Proposed Plan Remedy, the Alternate Remedy would provide better capture of areas with higher contamination that otherwise would migrate to areas of lower contamination. Fate and transport modeling of the Alternate Remedy shows that larger areas of higher contamination would migrate to the Pioneer Wells under EPA's Proposed Plan Remedy than under the Alternate Remedy (see Figure 2). Under the Proposed Plan Remedy, there is a potential for additional contaminants that could not be treated by existing wellhead treatment units to reach the Pioneer Wells. This potential is reduced under the Alternate Remedy, thereby reducing risk to the community.

- Under the Alternate Remedy, the volume of uncontaminated portions of the aquifer that would potentially become contaminated is similar to the volume that would be affected under the Proposed Plan Remedy (see Figures 7 and 8). However, under the Alternate Remedy, no additional public supply wells would be further impacted. Fate and transport modeling of the Alternate Remedy using the same hydraulic properties as used by EPA shows that no additional public supply wells would be threatened. More striking is the fact that by considering even a low rate of natural biodegradation in the model, short- and long-term predictions show that no uncontaminated portions of the aquifer would be affected beyond the proposed locations of the LE wells (see Figure 1).

In summary, the Alternate Remedy, particularly with an assumed low rate of biodegradation activity occurring in the plume, will result in a smaller, lower concentration plume, at substantially less cost and with substantially less extraction of clean water, compared to EPA's Proposed Plan Remedy. Accordingly, this more properly scaled and more efficient remedy achieves the RAOs equally, if not better, than EPA's Proposed Plan Remedy.

Comment 2: The proposal to deliver the treated water as drinking water would unnecessarily increase the risk to the public, will cost more than estimated, and may be infeasible.

The NRRB recommended in its Comments on the Draft FS Report that Region 9 provide a more thorough evaluation of the cumulative risk associated with delivering the treated water as drinking water. Region 9 completed this evaluation and concluded that the cumulative risk associated with Alternative 6 was within the acceptable range at a value of 4×10^{-5}. Under the Proposed Plan Remedy, there is a potential for additional contaminants that could not be treated by existing wellhead treatment units to reach the Pioneer Wells. However, this represents a significant increase in risk to the public based on review of the Human Health Risk Assessment conducted for OU-2, which concluded that "the OU-2 groundwater does not pose a current or immediate risk to human health due to the absence of a complete exposure pathway." This potential is reduced under the Alternate Remedy, reducing the risk to the drinking water supply.

In contrast, the reinjection of the treated water into the shallow aquifer, the aquifer in which groundwater is extracted, as proposed in the Alternate Remedy, is a lower risk option for dispensation of treated water. Shallow reinjection was not considered in alternative development (FS Section 3) of Region 9's FS due to Region 9's concern about placement of the injection wells. Region 9 states in the FS that shallow injection wells could not be installed upgradient of OU-2 due to low permeability soils or downgradient or cross-gradient of OU-2 due to potential mobilization of groundwater contamination at other sites; however Region 9's RI and FS do not identify any groundwater contamination or sources to the west of OU-2 and just north of the Pioneer Wells. Therefore, the Alternate Remedy proposed placement of the injection wells at this location, which would not mobilize groundwater contamination and would improve protection of the Pioneer Wells. Shallow reinjection, compared to deeper reinjection, which was used in Region 9's alternative development, also potentially could allow for reduced treatment of extracted groundwater, since the shallow groundwater is of poorer water quality than the deeper groundwater (i.e. higher total dissolved solids and chloride concentrations).

Moreover, water purveyors and others who participated in the EPA's August 2010 public meeting expressed serious concerns about the feasibility of Region 9's plan to deliver treated water as drinking water. The costs of extracting water in the form of required water master payments, as well as high transactional costs associated with negotiating agreements with water purveyors, are not included in the alternative's cost, which, if included, would make the alternative much less cost effective relative to other options. Again, in contrast, the reinjection

of the treated water into the shallow aquifer, as proposed in the Alternate Remedy, is a much more feasible option for dispensation of treated water, and has the added benefit of assisting in controlling any potential for further lateral spread of the plume in that location. (See Figure 8).

Region 9's final FS for Omega OU-2 notes some of the difficulties in implementing a drinking water end use, stating "[t]his remedial approach would be moderately difficult to implement due to the need to go through the CDPH 97-005 permit application process because the treated water would be considered to be coming from an impaired source." According to the California Department of Public Health (CDPH), CDPH follows Procedure Memorandum 97-005 ("Memo 97-005") for evaluating the use of extremely impaired sources for drinking water. According to CDPH's Memo 97-005, the "use of contaminated water as a drinking water source always poses a greater health risk and hazard to the public than the use of an uncontaminated source because of the chance that the necessary treatment may fail." Therefore, if a consumption area's drinking water production wells are not already impacted by the Omega Plume, a remedy that contemplates a public drinking water end use for the treated groundwater would create greater risk to public health. As stated by the CDPH, "[w]hen feasible choices are available, the sources presenting the least risk to public health should be utilized." Here, feasible drinking water supply alternatives are available and in use, making the proposed, added use of treated groundwater unnecessary and inadvisable. This conclusion is consistent with NRRB's comments and National Oil and Hazardous Substance Pollution Contingency Plan's (NCP's) primary requirements for remedial plans to protect human health and the environment (40 CFR 300.430(e)(9)(iii)(A)).

In response to the stated concerns at the public meeting about the drinking water end use, Region 9 noted it was feasible since it was selected in RODs and implemented at other sites in the Los Angeles Basin (31 August 2010 Transcript of Public Hearing, at 38:5-42:13). Region 9 subsequently identified a number of these sites, including Baldwin Park and Whittier Narrows in the San Gabriel Valley, as well as North Hollywood, Burbank, and Glendale North and South in the San Fernando Valley. Based on a letter from McKesson's counsel, however, we understand that while certain conditions may have justified selection of a drinking water end use for treated groundwater at these other sites, those conditions are not found at OU-2 of the Omega Site (see Attachment 1 for the letter from McKesson's counsel).

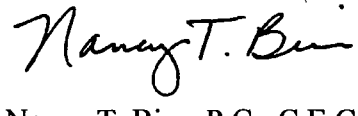
As noted in Region 9's OU-2 Proposed Plan Remedy: 1) "OU-2 contaminated groundwater does not pose a current or immediate risk to human health," and 2) "[a]ll water supply wells known to be impacted by the OU-2 plume have wellhead treatment units that remove the contaminants,

such as PCE, before the water is put into the distribution system, preventing any current exposure via that pathway." Accordingly, drinking water end use is not appropriate, practical, cost-effective, or more protective of human health at OU-2. Reinjection of the treated water, as proposed in the Alternate Remedy, is more protective.

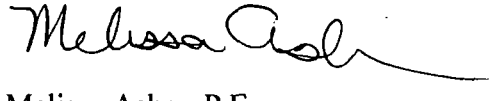
Finally, Region 9's Proposed Plan Remedy for OU-2 of the Omega Site does not provide alternative options for treated water, such as surface water discharge. We understand at other sites where a drinking water end use was selected, an additional alternative discharge option (usually surface water discharge) has also been required, often at significant cost (see Attachment 1). Total remedial costs will be higher where multiple or substantially modified discharge options are required to be implemented for different end uses. This is another unevaluated cost factor for the Omega OU-2 Site.

In conclusion, we strongly recommend that EPA consider the Alternate Remedy described above for implementation at OU-2 rather than the less efficient and potentially higher risk remedy described in the Proposed Plan Remedy.

Sincerely,



Nancy T. Bice, P.G., C.E.G.
Principal Engineering Geologist



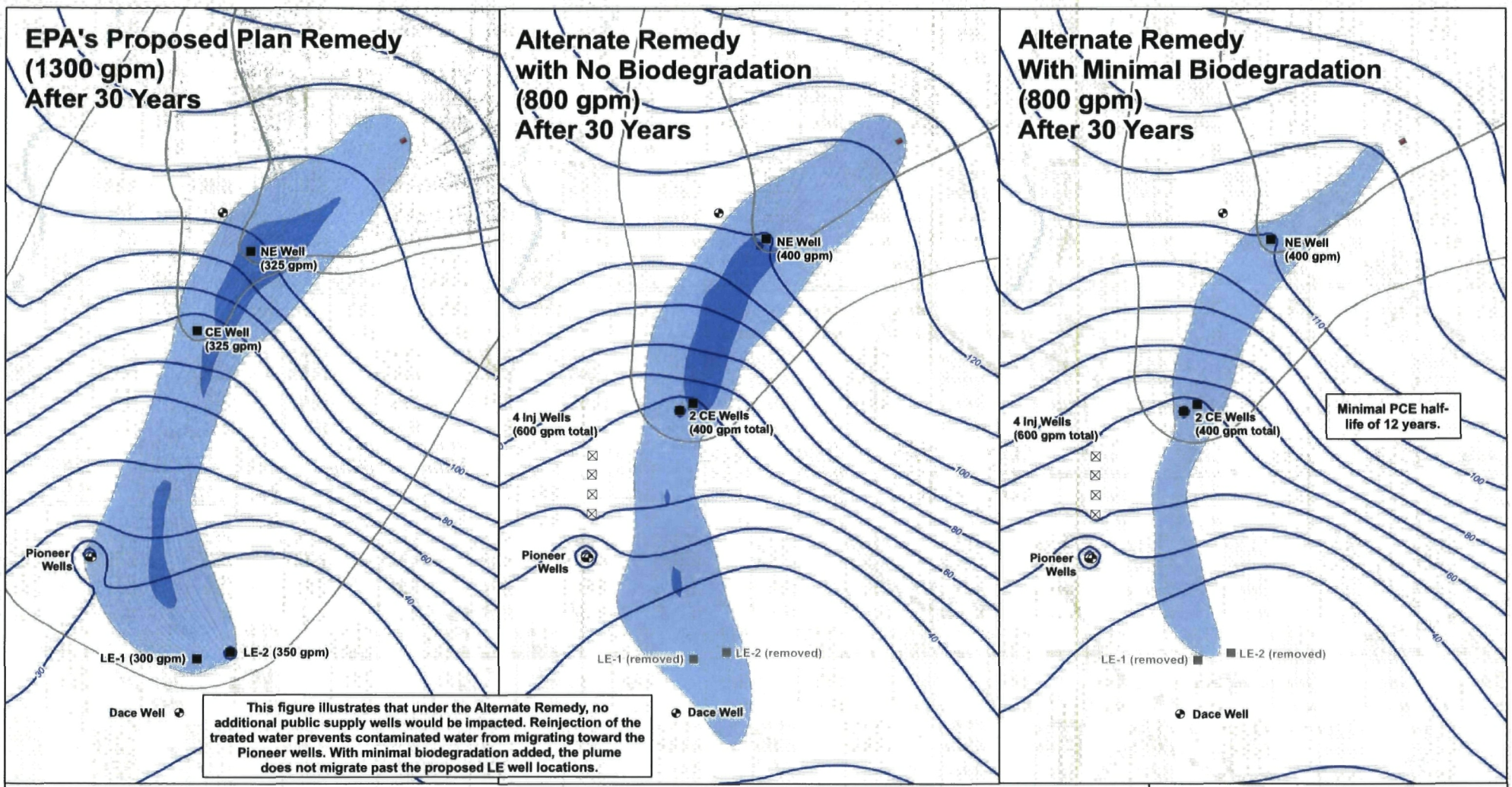
Melissa Asher, P.E.
Project Engineer

Gordon Thrupp, Ph.D., P.G., CHG
Associate Hydrogeologist

Attachments:	Figure 1	Comparison of EPA's Proposed Plan Remedy and Alternate Remedy
	Figure 2	Comparison of Public Supply Well Protection
	Figure 3	Capture of Other COCs by Alternate Remedy
	Figure 4	Illustration of VOCs That Are Treatable with Existing Wellhead Treatment
	Figure 5a	EPA's Proposed Plan Remedy, Modeling of 1,4-Dioxane Plume
	Figure 5b	Alternate Remedy, Modeling of 1,4-Dioxane Plume
	Figure 6	Illustration of Excessive Capture Zone Caused by Pumping 1,300 gpm from CE and NE Wells
	Figure 7	Spreading Under EPA's Proposed Plan Remedy
	Figure 8	Comparison of Spreading Under EPA's Proposed Plan Remedy and Alternate Remedy
	Figure 9	VOC Concentration Trends at Southern End of Plume
	Attachment 1	Letter from John D. Edgcomb, Edgcomb Law Group (Nov. 17, 2010)

Copies to: Jean Mescher, McKesson Corporation
John Edgcomb, Edgcomb Law Group

Figures



Comparison of EPA's Proposed Plan Remedy and Alternate Remedy

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Figure 1

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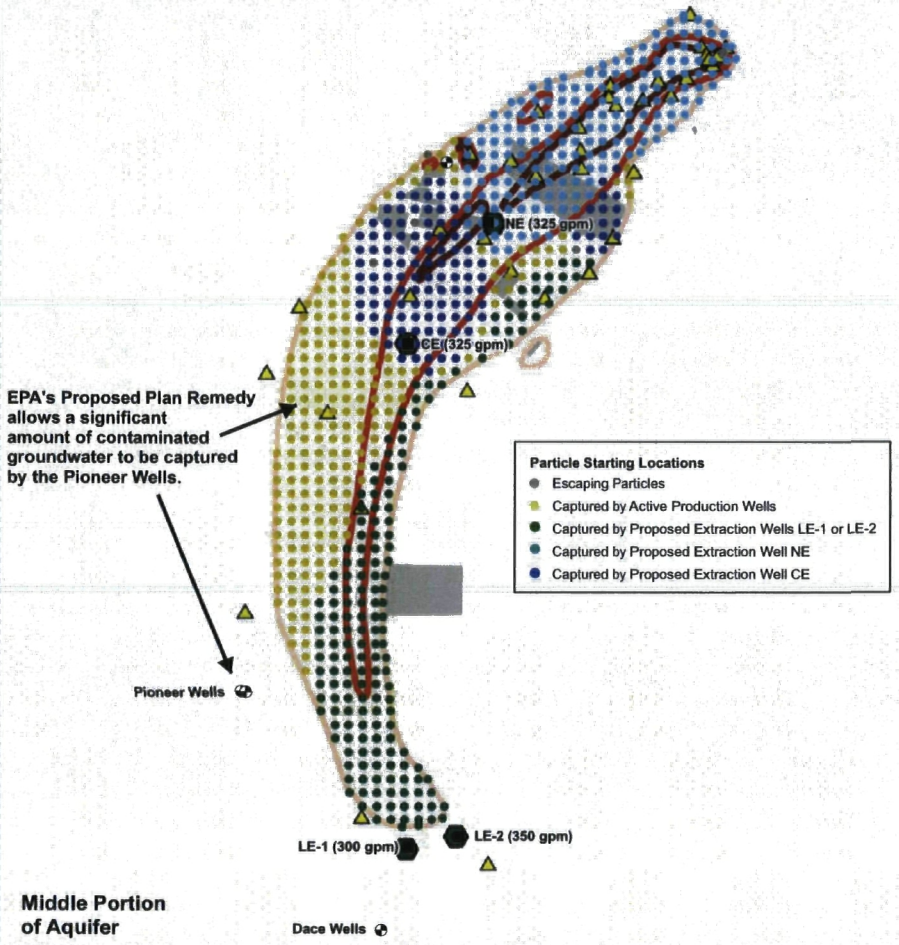
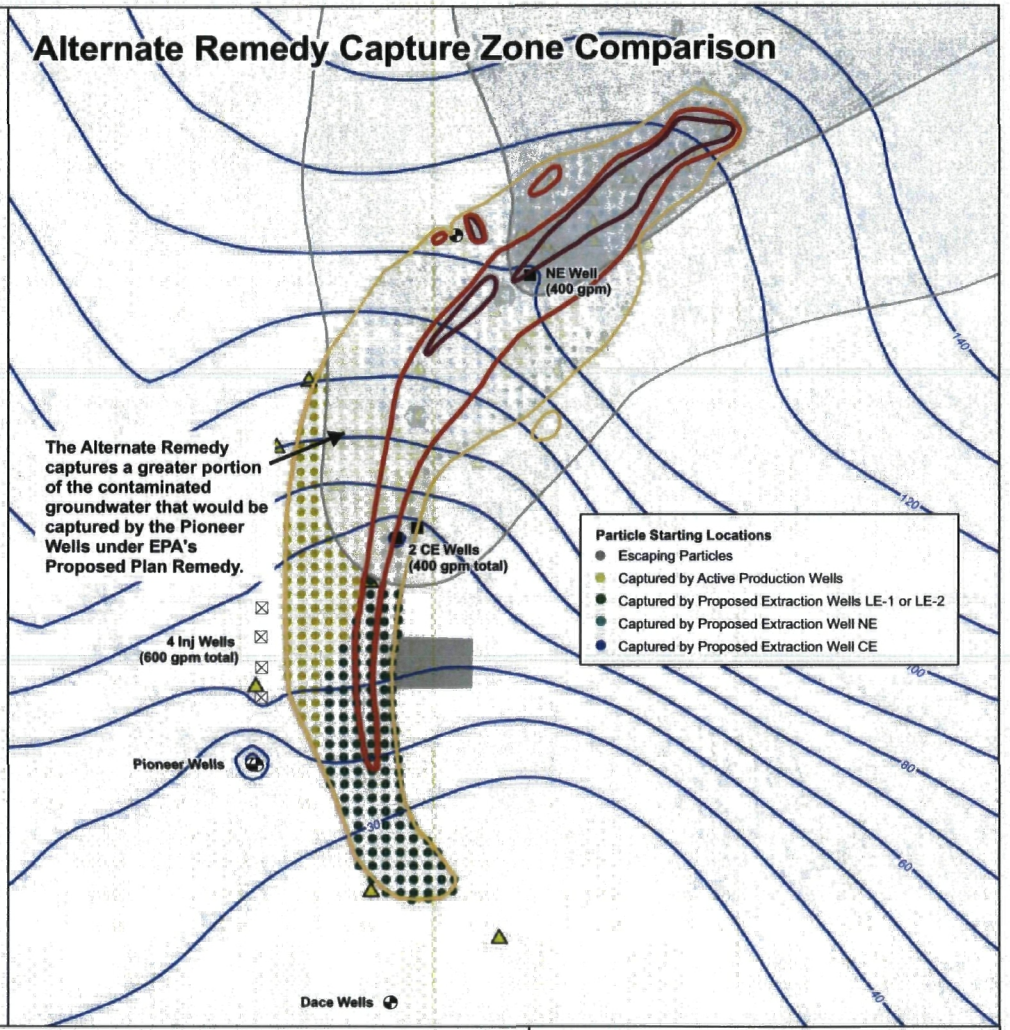
Capture Analysis for EPA's Proposed Plan Remedy



Alternate Remedy Capture Zone Comparison



Legend

- Extraction Well Location
- Injection Well Location
- Public Supply Well
- Estimated Capture Zone
- Estimated Groundwater Flow Pathlines
- Potentiometric Contour (ft msl)
- Omega Property
- Road

PCE Isoconcentration Contours:

- 5 ug/L
- 100 ug/L
- 500 ug/L

NOTES:
gpm = gallons per minute
ug/L = micrograms per liter
PCE = Tetrachloroethene
ft msl = feet Mean Sea Level
Capture zone results depicted for Model Layer 4.
Initial PCE Plume Source: CH2M Hill, RI/FS Reports, August 2010
Source: CH2M Hill, FS Report, August 2010, Figure A-14 (middle portion of aquifer)

N

0 3,000 6,000 Feet

Comparison of Public Supply Well Protection

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Figure 2

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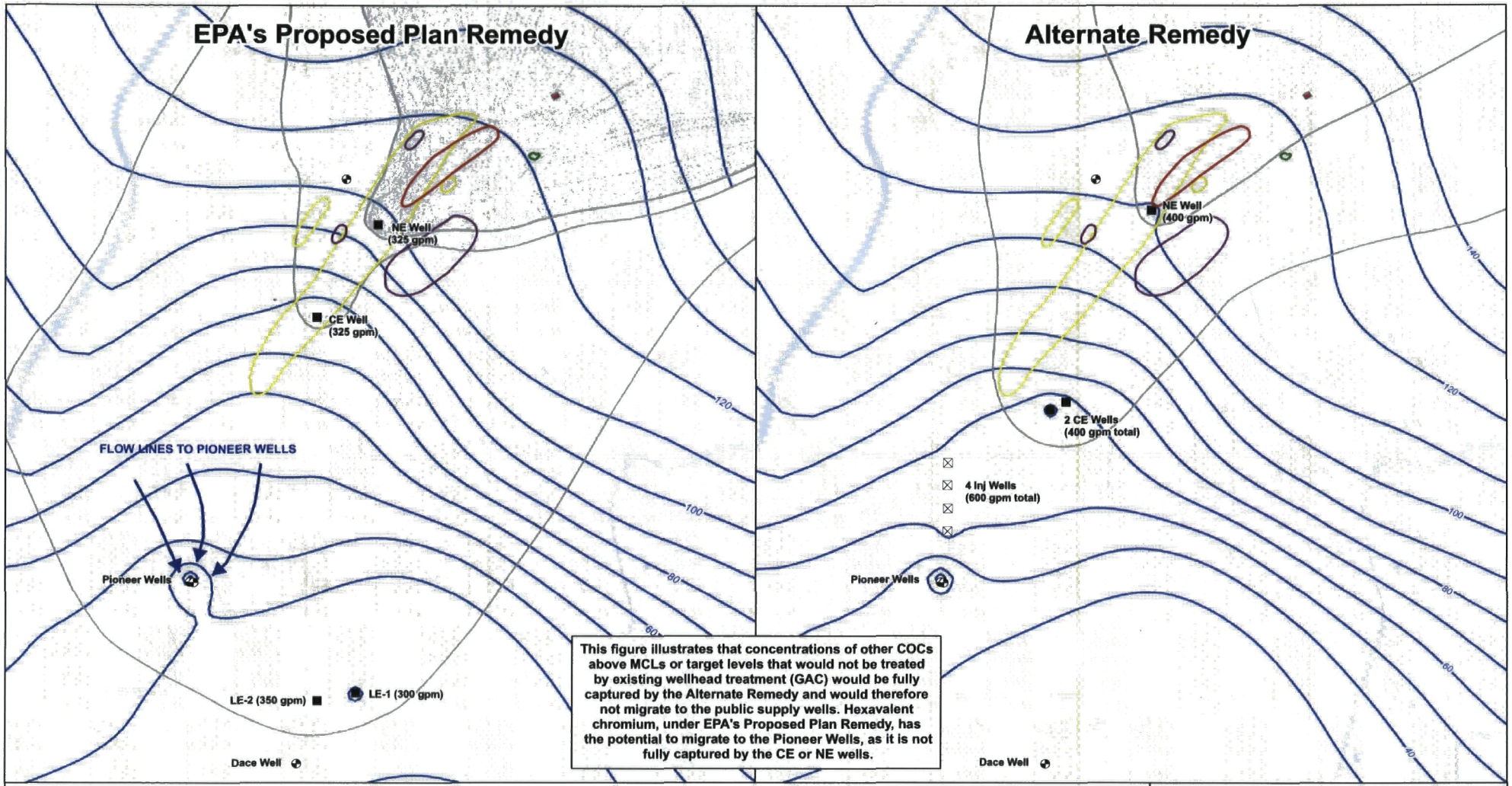

Capture of Other COCs

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Figure 3

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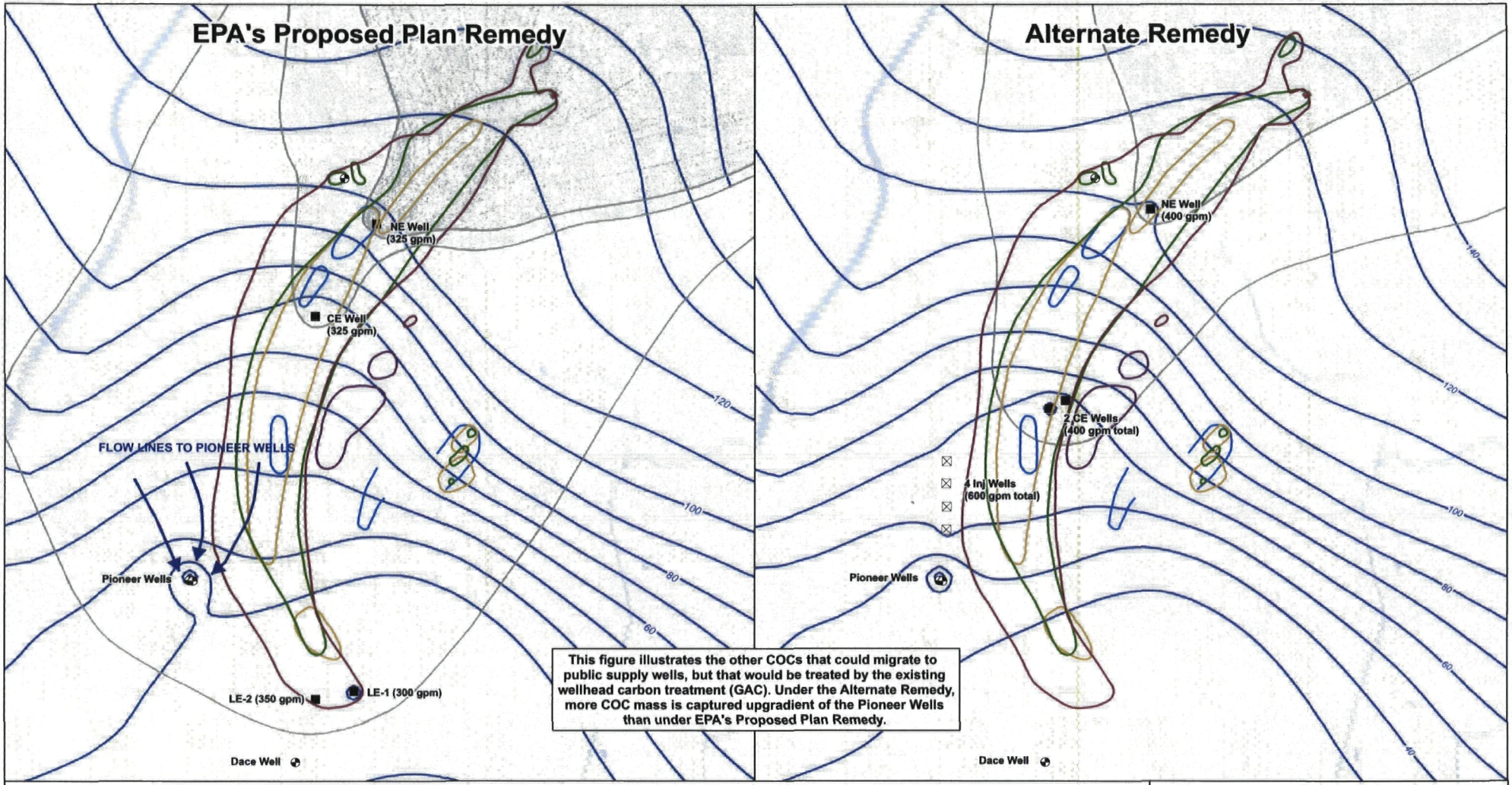

Legend

- Extraction Well Location
- Injection Well Location
- Public Supply Well
- Estimated Capture Zone
- Estimated Groundwater Flow Pathlines
- Potentiometric Contour (ft msl)
- Omega Property
- Road

COCs treated by GAC

Isoconcentration Contours

- TCE (5 ug/L)
- 1,1-DCE (6 ug/L)
- cis-1,2-DCE (6 ug/L)
- Benzene (5 ug/L)
- Vinyl Chloride (0.5 ug/L)

NOTES:
COC = Constituent of Concern
GAC = Granular Activated Carbon
gpm = gallons per minute
ug/L = micrograms per liter
TCE = Trichloroethene
DCE = Dichloroethene
ft msl = feet Mean Sea Level
Capture zone and flow pathline results depicted for Model Layer 4.
Isoconcentration Contour Source: CH2M Hill, RI Report, August 2010, Figures 5-11 through 5-28.

0 3,000 6,000 Feet

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Illustration of VOCs that are Treatable with Existing Wellhead Treatment

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Figure 4

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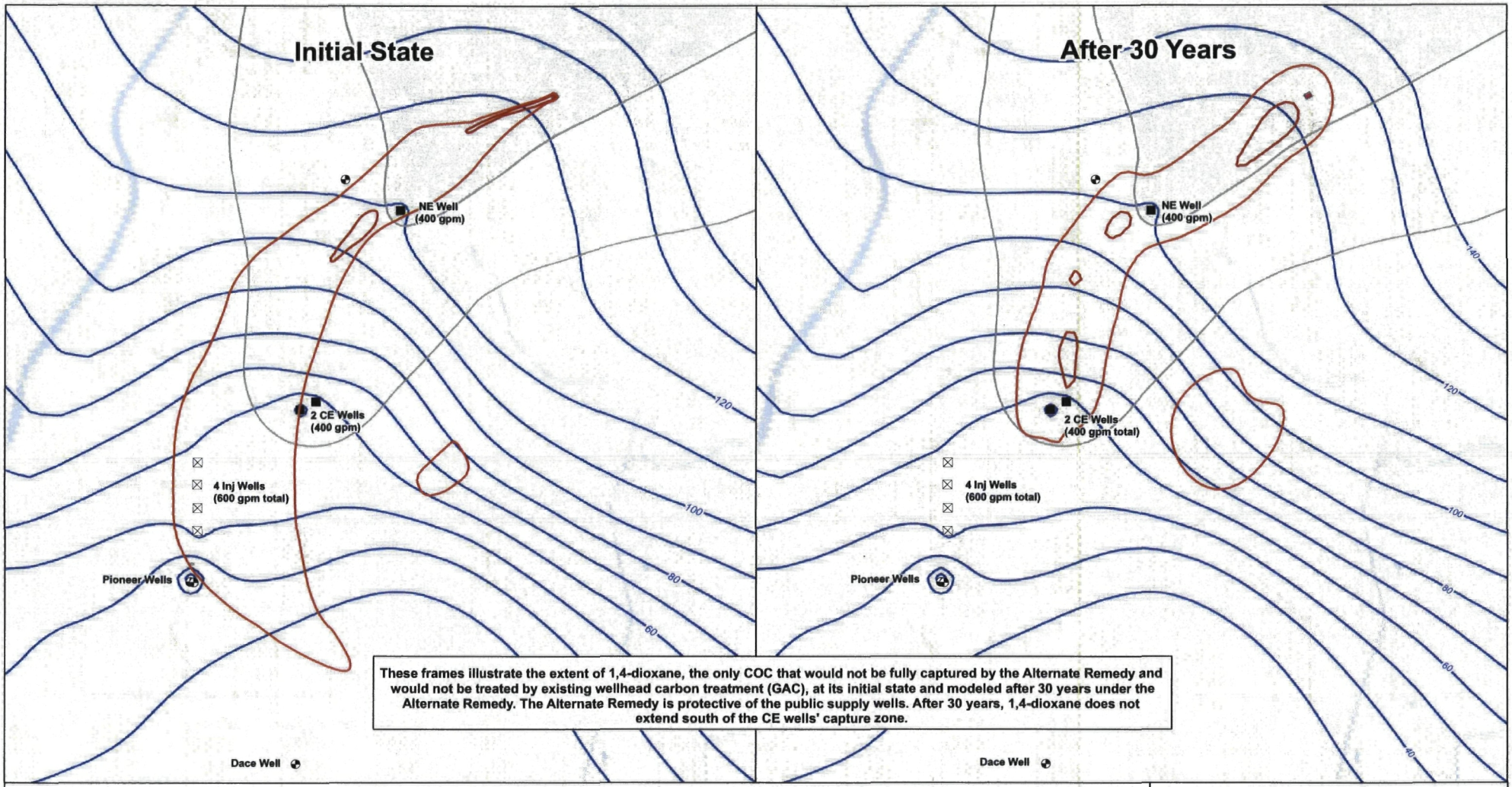

These frames illustrate the extent of 1,4-dioxane, the only COC that would not be fully captured by the Alternate Remedy and would not be treated by existing wellhead carbon treatment (GAC), at its initial state and modeled after 30 years under the Alternate Remedy. The Alternate Remedy is protective of the public supply wells. After 30 years, 1,4-dioxane does not extend south of the CE wells' capture zone.

Legend

- Extraction Well Location
- Injection Well Location
- Public Supply Well
- Estimated Capture Zone
- Estimated Groundwater Flow Pathlines
- Potentiometric Contour (ft msl)
- Omega Property
- Road

1,4-Dioxane Contours

- 1,4-Dioxane (3 ug/L)
- 1,4-Dioxane (100 ug/L)

NOTES:
gpm = gallons per minute
ug/L = micrograms per liter
COC = Constituent of Concern
GAC = Granular Activated Carbon
ft msl = feet Mean Sea Level
Capture zone and flow pathline results depicted for Model Layer 4.
Initial PCE Plume Source: CH2M Hill, RI/FS Reports, August 2010

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0 3,000 6,000 Feet

Alternate Remedy
Modeling of 1,4-Dioxane Plume

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Figure **5a**

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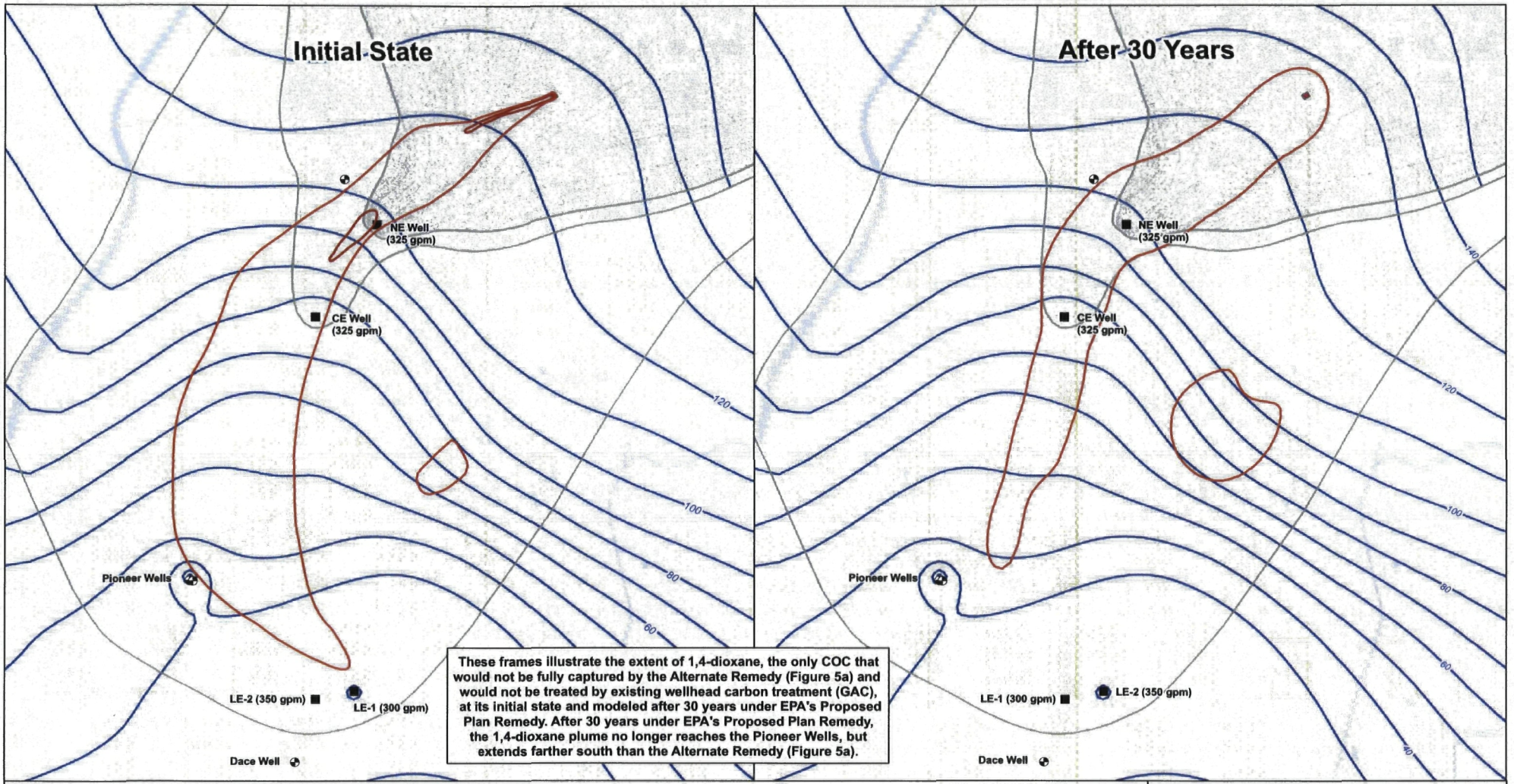

Legend

- Extraction Well Location
- Injection Well Location
- Public Supply Well
- Estimated Capture Zone
- Estimated Groundwater Flow Pathlines
- Potentiometric Contour (ft msl)
- Omega Property
- Road

1,4-Dioxane Contours

- 1,4-Dioxane (3 ug/L)
- 1,4-Dioxane (100 ug/L)

NOTES:
gpm = gallons per minute
ug/L = micrograms per liter
COC = Constituent of Concern
GAC = Granular Activated Carbon
ft msl = feet Mean Sea Level
Capture zone and flow pathline results depicted for Model Layer 4.
Initial PCE Plume Source: CH2M Hill, RI/FS Reports, August 2010

N

0 3,000 6,000 Feet

EPA's Proposed Plan Remedy Modeling of 1,4-Dioxane Plume

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Figure 5b

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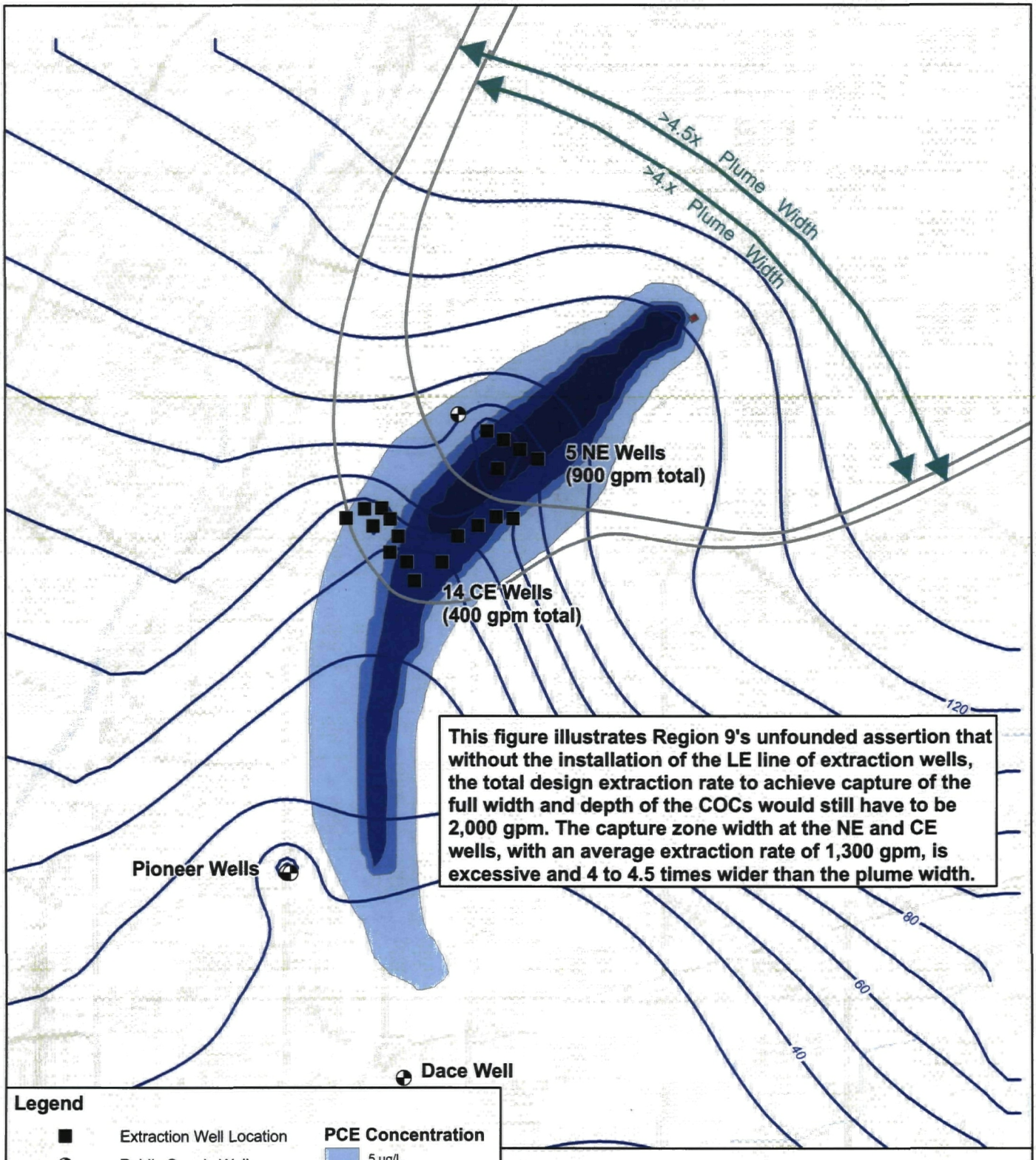

Illustration of Excessive Capture Zone Caused by Pumping 1,300 gpm from CE and NE wells

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Figure 6

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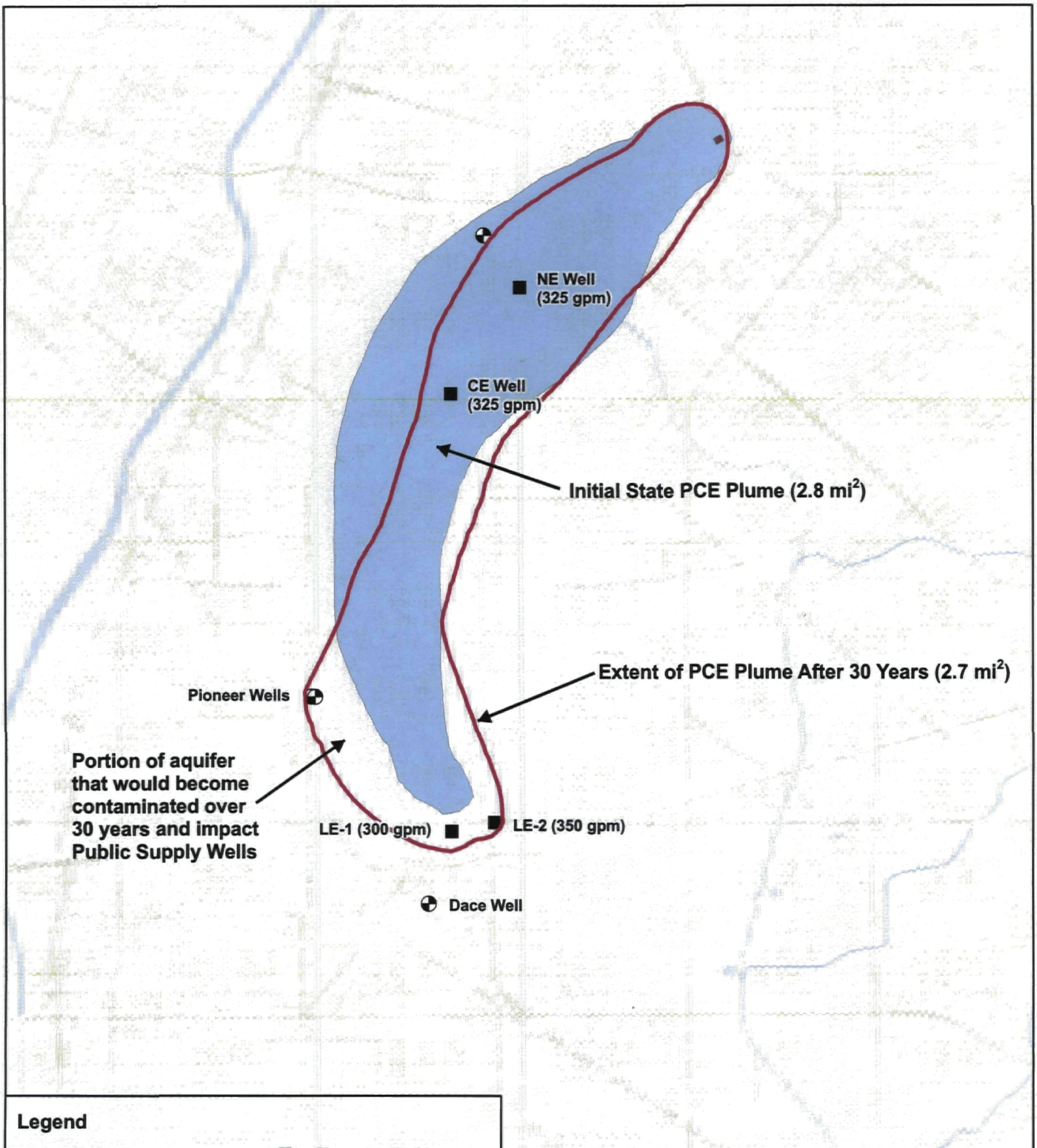

Legend

- Initial State PCE Plume Extent (5 ug/L)
- PCE Plume Extent (5 ug/L) Modeled after 30 years
- Extraction Well Location
- Public Supply Well
- Omega Property
- Road

NOTES:
gpm = gallons per minute
ug/L = micrograms per liter
PCE = Tetrachloroethene
m^2 = square miles
Initial PCE Plume Source: CH2M Hill, RI/FS Reports, August 2010

0 2,000 4,000 Feet

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Spreading Under EPA's Proposed Plan Remedy

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Figure 7

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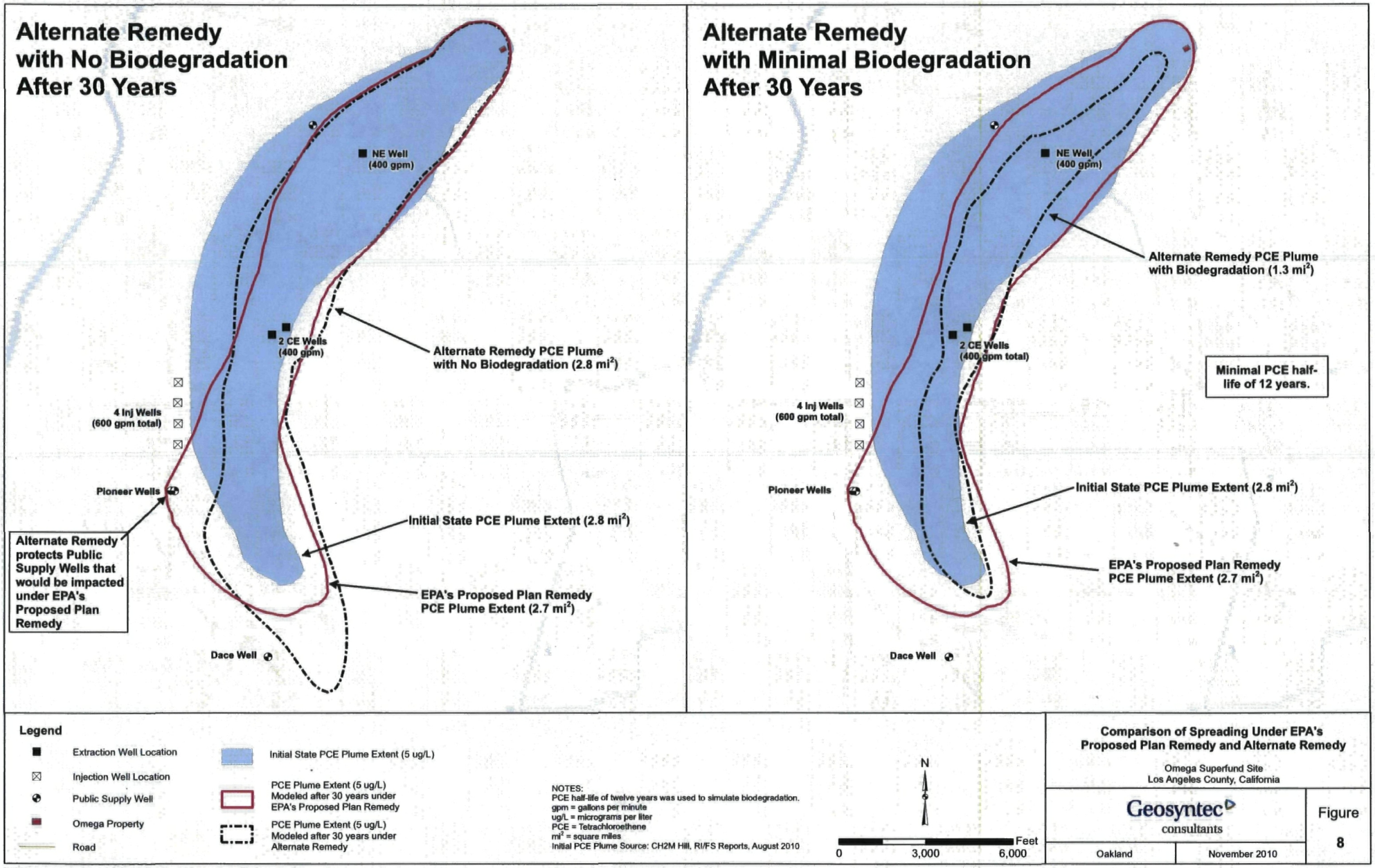

Comparison of Spreading Under EPA's Proposed Plan Remedy and Alternate Remedy

Omega Superfund Site
Los Angeles County, California

Geosyntec consultants

Oakland | November 2010

Figure 8

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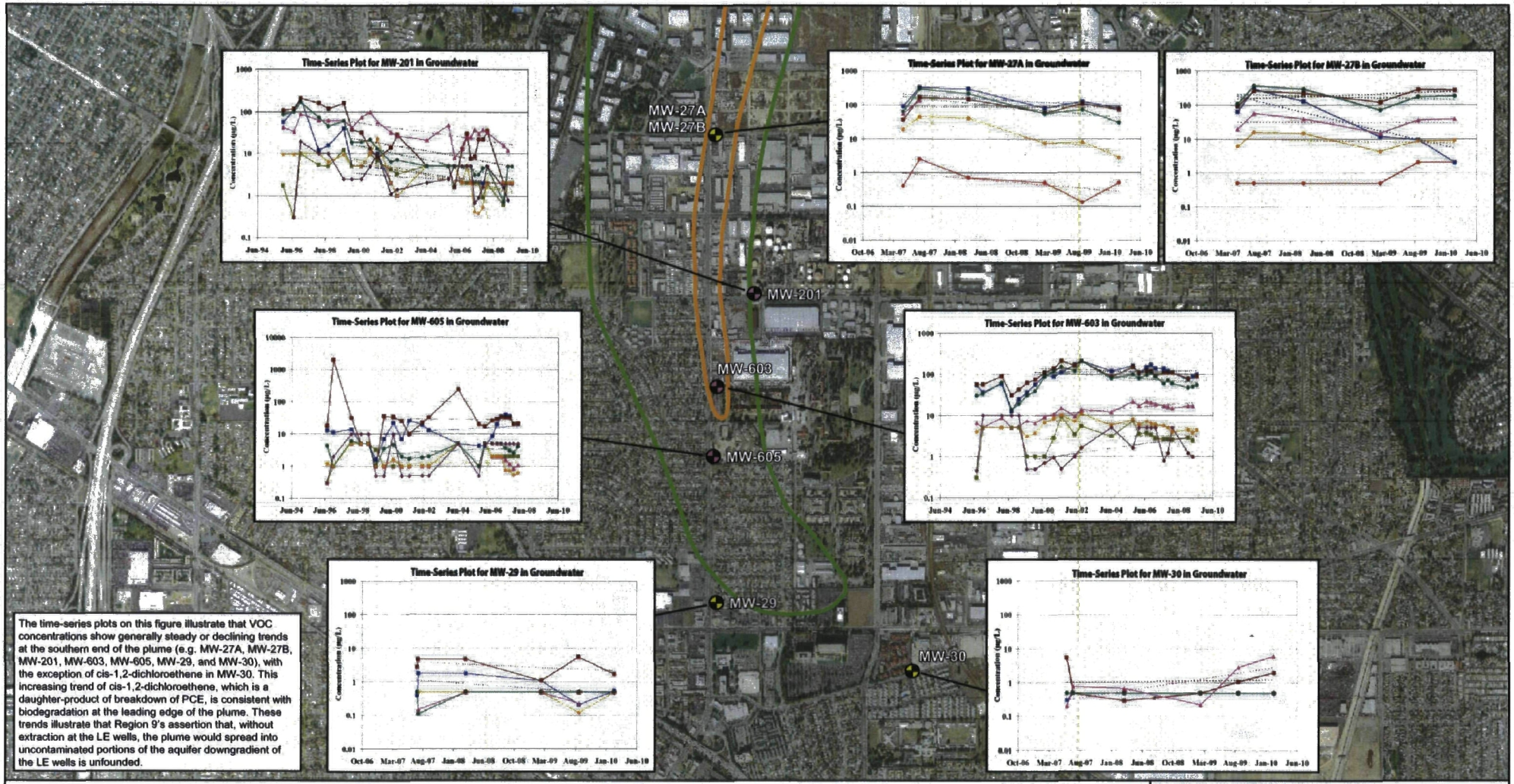

Legend

- CENCO Monitoring Well
- US EPA Monitoring Well

PCE Isoconcentration Contours

- 5 ug/L
- 100 ug/L

Time Series Plots

- Tetrachloroethene
- Trichloroethene
- cis-12-Dichloroethene
- trans-12-Dichloroethene
- 11-Dichloroethane
- 11-Dichloroethene
- Vinyl Chloride

Trend lines are shown as dashed lines and are only shown from 2000 onward and for compounds with >50% detections.
Not detected results are plotted as the laboratory reporting limit.

NOTES:
ug/L = micrograms per liter
PCE = Tetrachloroethene
VOC = Volatile Organic Compound
Isoconcentration contour source is CH2MHILL, RI/FS reports, August 2010.
MW-27, MW-29, and MW-30 timeseries data provided by the US EPA.
CENCO timeseries data (MW-201, MW-603, and MW-605) is from Murex Environmental, Inc., 1st Quarter Groundwater Monitoring Report, Former CENCO Refinery, 7 May 2010.

N

1,500 750 0 1,500 Feet

VOC Concentration Trends at Southern End of Plume

Omega Superfund Site
Los Angeles County, California

Geosyntec consultants

Oakland | November 2010

Figure 9

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Attachment 1

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November 18, 2010

Via Email
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Omega Superfund Site, OU-2; Review of Region 9 Superfund Sites Where Drinking Water End Use of Treated Groundwater Has Been Implemented.

Dear Ms. Bice:

We are writing to provide a summary of certain facts we identified in reviewing EPA documents concerning other EPA Region 9 Superfund sites where a drinking water end use of treated groundwater was implemented as part of a site remedy. This summary is provided in connection with the comment letter Geosyntec is preparing to submit on behalf of McKesson Corporation regarding EPA's Proposed Plan Remedy for Omega Operable Unit 2 ("OU-2").

In response to concerns stated at the public meeting about the proposed drinking water end use in its proposed remedy, Region 9 noted it was feasible since it was selected in Records of Decision ("RODs") and implemented at other sites in the Los Angeles Basin (Aug. 31, 2010 Transcript of Public Hearing, at 38:5-42:13). Region 9 subsequently identified a number of these sites, including Baldwin Park and Whittier Narrows in the San Gabriel Valley, as well as North Hollywood, Burbank, and Glendale North and South in the San Fernando Valley. We have reviewed agency documents concerning these other sites and found that two conditions appear to substantially differentiate the Omega OU-2 Site from these other sites: 1) the impacted production wells at these other sites were an immediate and direct exposure pathway, and thus a threat to human health; and 2) the water contamination at these other sites had forced the closure of production wells, reducing drinking water supplies, and forced water purveyors and communities to look for more expensive, alternate sources of water, such as treated groundwater. To our understanding, neither condition exists at the Omega OU-2 site.

At the Glendale North and South Operable Units, drinking water end use of treated groundwater is described by Region 9 as a specific response to the severe loss of a drinking water resource,

higher costs of alternative drinking water sources, and high risks to public health due to the consistent detection of contamination in "a large number of production wells" (2008 Five Year Review Report for San Fernando Valley – Area 2 Superfund Site, at 3-2, 3-5, 3-6; Region 9, San Fernando Valley [area 2 Glendale] website[1]). Similarly, in the North Hollywood Operable Unit, 27 of the Los Angeles Dept. of Water and Power's 38 most active production wells were impacted and forced to shut down, and at the Burbank Operable Unit, the City of Burbank was also forced to shut down its production wells and obtain drinking water from the Metropolitan Water District (2008 Five Year Review Report for San Fernando Valley (Area 1) Superfund Site, at 3-2). In addition, at the Baldwin Park Operable Unit, the community's water supply was substantially impaired, as 196 of 275 water supply wells were impacted (2007 First Five-Year Review Report for Baldwin Park, at 11). Similarly, in investigating the Whittier Narrows site, Region 9 noted that 59 wells were impacted, causing a primary route of potential exposure through domestic use of untreated groundwater (Whittier Narrows 2006 Five Year Review, at 11, 12.) Lost drinking water supplies at these sites were cited as providing substantial justification for selecting a drinking water end use for treated groundwater. (See, e.g., August 1989 San Gabriel Valley Fact Sheet, at 2, 3; San Fernando Valley [area 2 Glendale] website).

In contrast, Region 9's OU-2 Proposed Plan Remedy provides that: 1) "OU-2 contaminated groundwater does not pose a current or immediate risk to human health," and 2) "[a]ll water supply wells known to be impacted by the OU-2 plume have wellhead treatment units that remove the contaminants, such as PCE, before the water is put into the distribution system, preventing any current exposure via that pathway" (OU-2 Proposed Plan Remedy, at 5.) These facts appear to distinguish the Omega OU-2 site from the other sites referenced by EPA.

In addition, Region 9 does not appear to have evaluated sufficiently the difficulty of implementing a drinking water end use remedy at the Omega Site. Region 9's evaluation of the drinking water end use selected in the Proposed Plan Remedy does not include the high transactional costs associated with negotiating agreements with water purveyors, or the cost of extracting the water required by water masters. Under the National Oil and Hazardous Substance Pollution Contingency Plan ("NCP"), Region 9 is required to conduct a "much more detailed analysis of the remaining alternatives, detailed cost estimation, engineering evaluation, assessment of the extent to which the alternative will adequately protect public health and the environment." (Washington State Dep't of Transp. v. Washington Natural Gas Co., 59 F.3d 793, 802 (9th Cir. Wash. 1995), citing 40 C.F.R. § 300.68(g)-(i)). Moreover, such rationale must be

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[1] Available at http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/3dec8ba3252368428825742600743733/33e2071f3f682bf988257007005e9429!OpenDocument

documented. While Region 9 is required to evaluate in detail the cost of its drinking water end use remedy and alternative end uses, it does not appear to have done so. Rather, it simply acknowledged that the required negotiations to obtain the relevant permits will be complex, potentially costly and the responsibility of potentially responsible parties to obtain. (Aug. 31, 2010 Transcript of Public Hearing, at 40:10–41:10).

Region 9 is aware from its experience at other groundwater sites where a drinking water end use was selected as part of the remedy, water purveyor negotiations can be difficult and the transactional costs high. Region 9 described this process at the Baldwin Park Site as follows:

> "A variety of proposals were made in the 1990s for use of the water pumped to the surface and treated as part of the cleanup. Earlier plans to export the treated groundwater out of the San Gabriel Valley were replaced by plans to use much of the water locally to replace supplies lost when contamination forced the closure of water supply wells.
>
> The Baldwin Park cleanup plan combines cleanup and regional water supply goals. The negotiations needed to work out arrangements for a joint cleanup and water supply project were ultimately successful, but did not occur quickly or cheaply. The negotiations were complex and contentious for a number of reasons, including the high cost of cleanup, the number of parties involved in the negotiations, divergent interests among the water agencies, divergent interests among the PRPs, the desire for a comprehensive agreement, and an initial lack of trust among the negotiating parties."

(Region 9 San Gabriel Valley (Area 2) Baldwin Park website.[2])

Similarly, at the Whittier Narrows Site, remedial costs increased substantially after the California Department of Health Services ("CDHS") permit was obtained and the drinking water end use began to be implemented in 2003 (Whittier Narrows 2006 Five-Year Review, at 14, 16; Table 2.) At Whittier Narrows, the City of Whittier obtained a permit from the CDHS to use treated water from an intermediate groundwater zone as a source of drinking water supply in September 2003. (Whittier Narrows Five-Year Review, at 14.) From October 2002 to September 2003, approximately 9,253 acre-feet of water was extracted at a cost of $30 per acre-foot. (Id., at 16.) However, from October 2003 to September 2004, after the CDHS permit was obtained and drinking water treatment was implemented, the cost increased to $2,531 per acre-foot of extracted water, and very little water was extracted – only approximately 32 acre-feet. (Id.) The

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[2] Available at http://yosemite.epa.gov/r9/sfund/r9sfdocw.nsf/ViewByEPAID/CAD980818512?OpenDocument.

next year, from October 2004 to September 2005, costs remained much higher than pre-permit treatment, costing $90/acre-foot. (Id.) Again, in October 2005 to June 2006, costs remained high at $106/acre-foot. (Id.) Thus, implementation of the drinking water end use treatment appears to have greatly increased remedial costs and lowered effectiveness. No such costs appear to be estimated or incorporated in the OU-2 cost estimate.

Finally, Region 9's Proposed Plan Remedy for OU-2 of the Omega Site does not evaluate in detail the likely need for implementation of multiple alternative options for management of treated water, such as surface water discharge, in conjunction with Region 9's selected drinking water end use. Although other end-use options were evaluated under alternative remedies, Region 9's selected remedy only evaluated the effectiveness and costs of implementing a single end use. Yet, at the other San Gabriel Valley and San Fernando Valley sites where a drinking water end use was implemented, an additional alternative discharge option (usually surface water discharge) has also been required to be implemented, often at significant cost. At Whittier Narrows, all of the treated water was originally discharged to designated surface water discharge points (Legg Lakes, Nature Center Lake, and the Zone 1 Ditch). (Whittier Narrows, 2006, Five Year Review, at 14). After the CDHS permit was obtained for drinking water end use, the extraction, treatment, and conveyance pipeline system had to be modified, causing the incurrence of additional and substantial transactional and operational costs. (Id., at 14-16.) Later, only the water extracted from the intermediate-depth groundwater zone was treated for drinking water end use, with the extracted shallow zone water still discharged to the surface. (Id.)

At the Baldwin Park site, various technical problems required surface discharge for over a year. (2007 First Five-Year Review Report for Baldwin Park, at 17-18.) Moreover, one of the extraction wells at the site had not been permitted for drinking water end use as of 2007, and had been discharged to surface water. (Id., at 18.) Similarly, at the North Hollywood Operable Unit, contaminant detections have caused treated water to be discharged to the Los Angeles Sewer system. (2008 Five Year Review Report for San Fernando Valley (Area 1) Superfund Site, at 6-2, 6-3.) In addition, the Glendale OU required the piping of treated water to the City of Glendale's Grandview Reservoir, as well as discharge to the Los Angeles River. (2008 Five Year Review Report for San Fernando Valley – Area 2 Superfund Site, at 4-1.)

Very Truly Yours,

John D. Edgcomb

cc: Melissa Asher